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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/690,088	10/21/2003	Harald Kaspar	58136US004	4837

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EXAMINER	
HU, HENRY S	

ART UNIT	PAPER NUMBER
1713	

DATE MAILED: 12/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/690,088	KASPAR ET AL.	
	Examiner	Art Unit	
	Henry S. Hu	1713	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *Amendment of September 15, 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. It is noted that USPTO has received an Amendment filed on September 15, 2004. **No claim was amended or added**. As suggested by the examiner, the paragraphs including page 9 at line 4, page 9 at line 17, page 16 at line 14, page 17 at line 10 and page 18 at line 29 were replaced with new paragraphs to correct informalities or typographical errors. With respect to the 112-2nd paragraph claim rejection for Claim 11, the Applicants have provided the use of "substantially" has been well defined on page 2, line 26 – page 3, line 9. The specification objections (a) - (c) as well as the 112-2nd paragraph claim rejection on Claim 11 are therefore removed. After further consideration, **all 102 and 103 rejections in the previous Office Action filed on June 17, 2004 are now removed**. **Claims 1-14 are pending** now. A new action follows.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. *The limitation of parent* ***Claim 1*** *of the present invention relates to process of making a* ***copolymer of fluorinated olefin and hydrocarbon olefin*** *selected from ethylene, propylene and mixtures thereof, the process comprising a* ***substantially emulsifier free aqueous emulsion polymerization*** *of said fluorinated olefin and said hydrocarbon olefin and wherein said process comprises copolymerization of said fluorinated olefin and hydrocarbon olefin* ***in the presence of fluoropolymer particles and/or in the presence of fluorinated liquid*** *that is in a form suitable for improving the co-polymerization of said fluorinated olefin and hydrocarbon olefin. See other limitations of dependent* ***Claims 2-14.***

4. Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over McCarthy et al. (US 5,955,556) in view of Tournut et al. (US 4,025,481).

Regarding the limitation of parent **Claim 1**, **McCarthy** et al. disclose the preparation of a stable aqueous **self-dispersible** fluorinated copolymer dispersion of up to

48% polymer solids in water **in the absence of surfactant** due to improved conversion rate of monomer to polymer (abstract, line 1-11). McCarthy et al. further disclose during polymerization process, fluoropolymer macromolecules are produced having inorganic, **"surfactant-like" functional end groups** which impart excellent latex stability to the polymer even these end groups are present in very low concentration (column 6, line 61-65). McCarthy et al. furthermore disclose that copolymers can be made from **combination of fluoroolefin(s) and nonfluoroolefin(s)** (column 3, line 49 – column 4, line 10).

The McCarthy reference is silent about using the presence of **fluorinated liquids** in the polymerization. **Tournut** et al. teach that **an inactive halogenated saturated hydrocarbon such as difluorochloromethane or trifluorotrichloroethane useful as a stabilizing agent can be presented in the aqueous emulsion polymerization** with the polymerizable fluorinated monomer in order to obtain **a stabilized aqueous dispersion and a lower molecular weight since such a halocompound can also be generally useful as chain transfer agent** (column 2, line 10-31 and 50-68; abstract, line 1-15).

5. In light of the fact that copolymers produced by Tournut and McCarthy are containing **the same type of monomers, which can be obtained through the same type of aqueous emulsion polymerization**, one having ordinary skill in the art would have therefore found it obvious to **modify McCarthy's emulsion polymerization process by adding the saturated fluorinated compounds such as difluorochloromethane or**

trifluorotrichloroethane as taught by Tournut. One would expect one advantage is to obtain a lower molecular weight and a more stability on the final polymeric product **since the produced polymer being in the presence of such an inactive stabilizing compounds, which can also be useful as a chain transfer agent**.

6. Regarding **Claims 2-3 and 7**, some of the co-polymerization process described on column 5 at line 31 – column 6, line 11 is overlapping limitations of Claims 2-3 and 7.

Regarding **Claim 5**, a particle size in the range of 0.01-1.0 micron is obtained (column 3, line 6-8). Therefore, it is overlapping the claimed numbers by conversion.

Regarding **Claim 6**, inactive fluorinated liquids including 1,1,2-trifluoro-1,2,2-trichloroethane or carbon tetrachloride are delivered into the reactor by known conventional way used (see Tournut's working examples 1-5).

Regarding **Claim 10**, fluorinated vinyl ethers are included (column 3, line 59-64).

Regarding **Claim 11**, some of the copolymers obtained from the references certainly carry the claimed melting point and are substantially amorphous.

Regarding **Claims 12 and 13**, examples of the radical polymerization initiators are organic or inorganic peroxide, persulfate, azo compound, and the like; they are conventionally used in the art and are thermally initiated (column 4, line 15-43).

Regarding **Claim 14**, various examples of copolymers are from **tetrafluoroethylene** (TFE) **and propylene** and can be prepared in any desirable mole ratio (column 3, line 49 – column 4, line 14).

Remaining dependent **Claims 4 and 8-9** are thereby rejected with the above rejection for Claims 1-3, 5-7 and 10-14.

7. Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oxenrider et al. (US 5,453,477) in view of Tournut et al. (US 4,025,481).

Regarding the limitation of parent **Claim 1**, **Oxenrider** et al. disclose preparation of stable aqueous fluorinated copolymer dispersion **in the absence of soaps or surfactants** due to improved wettability of polymer particles (abstract, line 1-12; column 3, line 18-23; column 16, line 18-31). Oxenrider et al. further disclose that copolymers can be made from **a combination of fluoroolefin(s) and nonfluoroolefin(s)** (column 3, line 59 – column 4, line 5; column 7, line 42-57).

The Oxenrider reference is silent about using fluorinated liquids in the polymerization. **Tournut** et al. teach that **an inactive halogenated saturated hydrocarbon such as difluorochloromethane or trifluorotrichloroethane useful as a stabilizing agent can be presented in the aqueous emulsion polymerization** with the polymerizable fluorinated monomer in order to obtain **a stabilized aqueous dispersion and a lower molecular weight since such a halocompound can also be generally useful as chain transfer agent** (column 2, line 10-31 and 50-68; abstract, line 1-15).

8. In light of the fact that copolymers produced by Tournut and Oxenrider are containing **the same type of monomers, which can be obtained through emulsion polymerization**. Therefore, one having ordinary skill in the art would have found it obvious to **modify Oxenrider's emulsion polymerization process by adding the saturated fluorinated compounds such as tetrafluoroethane or trifluoroethane as taught by Tournut**. One would expect one advantage is to obtain a lower molecular weight and a more stability on the final polymeric product **since the produced polymer being in the presence of such an inactive stabilizing compounds, which can also be useful as a chain transfer agent**.

9. Regarding **Claims 2-3 and 7**, some of the co-polymerization process described on column 10 at line 16 – column 15, line 31 is overlapping limitations of Claims 2-3 and 7.

Regarding **Claim 5**, although the reference is silent of a specific particle size, the claimed number being below 150 nm is conventional in the art.

Regarding **Claim 6**, inactive fluorinated liquids including 1,1,2-trifluoro-1,2,2-trichloroethane or carbon tetrachloride are delivered into the reactor by known conventional way used (see Tournut's working examples 1-5).

Regarding **Claim 10**, fluorinated vinyl ethers **may be** included according to Oxenrider's statement (column 3, line 63 – column 4, line 1).

Regarding **Claim 11**, some of the copolymers obtained from the references certainly carry the claimed melting point and are substantially amorphous.

Regarding **Claims 12 and 13**, examples of the radical polymerization initiators are organic or inorganic peroxide, persulfate, azo compound, and the like; they are conventionally used in the art and are thermally initiated (column 4, line 38-52; column 9, line 11-13).

Regarding **Claim 14**, one example of copolymers is from tetrafluoroethylene (TFE) and ethylene and can be prepared (column 3, line 65-66).

Remaining dependent **Claims 4 and 8-9** are thereby rejected with the above rejection for Claims 1-3, 5-7 and 10-14.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicants' disclosure. The following references relate to process of making a copolymer of fluorinated olefin and hydrocarbon olefin with **substantially emulsifier free** aqueous emulsion polymerization and in the presence of fluoropolymer particles and/or fluorinated liquid:

US Patent No. 3,462,401 to Kometani et al. disclose that the aqueous dispersion polymerization process to prepare PTFE molding powder can be processed in the presence of a combination of fluorosurfactants with one of which is PFPE carboxylic acid or salt (abstract, line 1-3; column 11, line 25-50), as well as some organic compound such as **1,1,2-trichloro-1,2,2-trifluoroethane, 1,2-dichlorotetrafluoroethane or tetrachloro-1,2-difluoroethane** (column 3, line 10-15). No claimed **substantially emulsifier free process** is disclosed.

11. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Henry S. Hu whose telephone number is **(571) 272-1103**. The examiner can be reached on Monday through Friday from 9:00 AM –5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on (571) 272-1114. The fax number for the organization where this application or proceeding is assigned is (703) 872-9306 for all regular communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Henry S. Hu

November 1, 2004

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